

AMENDMENTS TO THE SPECIFICATION:

Please amend the specification as follows:

On page 1, after the title, please add the following paragraph:

This application is a national stage filing under 35 U.S.C. § 371 of International Application No. PCT/ CH2004/000542, filed on August 27, 2004, which claims priority to European Application No. 03405624.2, filed on August 29, 2003, the disclosures of which are expressly incorporated herein by reference to their entireties..

On page 1, before the paragraph beginning on line 2, please add the following heading:

TECHNICAL FIELD

On page 1, amend the paragraph beginning on line 2 as follows:

The present invention relates to watch movements ~~of the type comprising and~~ more particularly, to watch movements including a visible mobile element ~~and ensuring~~ an animation of ~~the~~ a display.

On page 1, amend the paragraph beginning on line 4 as follows:

~~More precisely,~~ Embodiments of the present invention ~~relates to~~ include a mechanical-type watch movement, comprising a frame and, supported by the frame:

[[-]] a work train comprising a plurality of ~~wheels and~~ mobiles periodically driven in rotation by a driving element,

[[-]] a mobile animated by a pulsed movement and including a kinematic connection with the work train,

[[~~-~~]] an animation part ~~intended~~ configured to be visible and arranged ~~in such a way as~~ to be animated by a periodic movement,

[[~~-~~]] a control element for the animation part, and

[[~~-~~]] an animation train in mesh with a mobile of the work train and driving the control element.

On page 1, before the paragraph beginning on line 14, please add the following heading:

BACKGROUND INFORMATION

On page 1, amend the paragraph beginning on line 14 as follows:

A watch movement ~~of this type~~ is described, for example, in patent CH 30.220, which proposes to animate a figurine by means of a wheel connected to ~~the~~ a work train comprising ratchet teeth. The latter periodically ~~drive~~ drives a rod forming part of ~~the~~ an automaton. Such a solution has the drawback that the movement of the automaton is jerky, owing to jumps over the ratchet teeth.

On page 1, amend the paragraph beginning on line 20 as follows:

Furthermore, watches are known such as that described in document FR 630.190, in which a pendulum image is fixed on ~~the~~ a pallet fork of ~~the~~ an escapement. This image is thereby abruptly displaced with each alternation. Here, too, the movement is jerky and therefore more irritating than calming.

On page 1, before the paragraph beginning on line 24, please add the following heading:

SUMMARY OF THE INVENTION

On page 1, amend the paragraph beginning on line 24 as follows:

~~The~~ An object of an exemplary embodiment of the present invention is to realize an animation in which the jerks due to the pulsed movement of ~~the~~ an escapement or of ~~the~~ a motor are gradually dampened in order that the movement of ~~the~~ an automaton is uniform and jerk-free. To this end, ~~the~~ a watch movement according to one aspect of the invention ~~is characterized in that the~~ may include an animation train, ~~the~~ a control element and ~~the~~ an animation part ~~are~~, arranged in such a way that ~~the periodic movement of the automaton~~ has a sinusoidal oscillation movement.

On page 2, amend the paragraph beginning on line 1 as follows:

In order to obtain an optimal simulation quality, an elastic element ~~is~~ may be interposed between ~~the~~ a mobile of ~~the~~ a work train with which the animation train is in mesh and the animation part, thus forming a mechanical filter through the combination of the elastic element with the inertia of the mobiles of the animation train, ~~of~~ the control element and ~~of~~ the animation part.

On page 2, amend the paragraph beginning on line 6 as follows:

From the point of view of the arrangement of the various components, it ~~appears~~ to may be advantageous for the animation train to be connected to the work train by ~~its~~

a seconds mobile. In ~~this case~~ such an embodiment, the animation train ~~is~~ may be arranged ~~in such a way as~~ to accelerate the rotation speed of the seconds mobile toward the mobile cooperating with the animation part.

On page 2, amend the paragraph beginning on line 11 as follows:

Advantageously, the animation part ~~may oscillates~~ oscillate at a frequency ranging between 0.2 and 2 Hz.

On page 2, amend the paragraph beginning on line 13 as follows:

In one particular embodiment, the movement ~~additionally comprises~~ may also include a lever. ~~The A~~ last mobile of the animation train ~~is~~ may be equipped with a board. Moreover, the animation part and the board ~~are~~ may be equipped with eccentrically disposed connecting means arranged ~~so as each~~ to be connected to one of the ends of the lever, in order ~~together~~ to form a connecting rod connecting the animation train to the animation part.

On page 2, amend the paragraph beginning on line 19 as follows:

In a first variant, the lever ~~has~~ may include, over at least a part of its length, an elastically deformable structure, arranged in such a way as to constitute ~~said~~ the elastic element.

On page 2, amend the paragraph beginning on line 22 as follows:

In a second variant, the elastic element may elastically ~~connects~~ connect two coaxial mobiles of the animation train.

On page 2, amend the paragraph beginning on line 24 as follows:

Advantageously, the elastic element may ~~forms~~ form, with the animation part and the mobile(s) of the train interposed between that which may ~~cooperates~~ cooperate with the animation part and that which is may be connected to the elastic element, an oscillating system, the having a period of which ranges ~~ranging~~ between that ~~which is defined by the periodicity of the advancement of the mobiles~~ of the work train and that of the ~~alternating~~ periodic movement of ~~said~~ the animation part.

On page 3, amend the paragraph beginning on line 1 as follows:

In order to make the animation part as shockproof as possible, it is may be mounted pivotably on the frame, and its center of gravity is may be located substantially on its pivot axis.

On page 3, amend the paragraph beginning on line 4 as follows:

In order to allow the use of an already existing watch caliber, the frame of the movement according to an embodiment of the invention ~~comprises~~ may include:

[[-]] a first plate and a first bridge, between which pivot the mobiles of the work train, and

[[-]] a second plate on which pivot the mobiles of the animation train and the animation part, the second plate, the animation train and the animation part together forming an independent module which can be fixed by the second plate onto the first plate.

On page 3, amend the paragraph beginning on line 12 as follows:

It is clear that all or part of the animation train can likewise pivot within a bridge, which ~~bridge is~~ may be fixed on the second plate.

On page 3, before the paragraph beginning on line 14, please add the following heading:

BRIEF DESCRIPTION OF THE DRAWINGS

On page 3, amend the paragraph beginning on line 14 as follows:

Other advantages and characteristics of the invention will emerge from the following description, made with regard to the appended ~~drawing~~ drawings, in which:

[[-]] ~~figure~~ FIG. 1 represents a watch equipped with a watch movement according to one exemplary embodiment of the invention;

[[-]] ~~figure~~ FIG. 2 is a plan view of a part of the watch movement according to one exemplary embodiment of the invention, ~~which carries out the animation function,~~ and

[[-]] ~~figure~~ FIG. 3 is a sectional view along the lines III-III of the movement part illustrated in ~~figure~~ FIG. 2;

[[-]] ~~figures~~ FIGS. 4 and 5 show, on a larger scale and respectively in plan view and in section, a part of the movement of ~~figures~~ FIGS. 2 and 3,

[[-]] ~~figure~~ FIG. 6 is a sectional view of a watch movement according to a second exemplary embodiment of a movement according to the invention, and

[[-]] ~~figure~~ FIG. 7 represents a third exemplary embodiment of the invention.

On page 4, before the paragraph beginning on line 1, please add the following heading:

DETAILED DESCRIPTION

On page 4, amend the paragraph beginning on line 1 as follows:

The watch represented in ~~figure~~ FIG. 1 comprises a case 10 defining a receptacle in which there ~~is~~ may be disposed a watch movement which will be described with reference to, for example, ~~figures~~ FIGS. 2 to 5, ~~which~~ The movement ~~comprises~~ may include a work train and a minute train bearing, respectively, second hands 12, minute hands 14 and hour hands 16. A dial 18 ~~is~~ may be interposed between the movement and the hands. ~~It is~~ Dial 18 may be pierced by a window 20, through which can be seen an animation part 22, arranged in such a way as to simulate the movement of a pendulum, as will be explained below.

On page 4, amend the paragraph beginning on line 9 as follows:

~~figure~~ FIG. 2 shows, in top view, a watch movement 24 according to one exemplary embodiment of the invention, ~~such as that~~ Watch movement 24 is housed

in the case 10. ~~The~~ In FIG. 2, dial 18 has been removed, and ~~The~~ hands 12, 14 and 16 are visible in transparency. ~~The animation~~ Animation part 22 can likewise be seen, ~~its~~ with its extreme positions are shown in dotted representation.

On page 4, amend the paragraph beginning on line 13 as follows:

~~The movement~~ Movement 24 ~~comprises~~ may include a base caliber 26, represented schematically in side view in ~~figure~~ FIG. 3, ensuring the vital functions of a timepiece, i.e. the power supply, the generation of a base frequency, the mechanical division by means of trains, as well as the correction functions. ~~Its~~ The time base of movement 24 can equally well be may include a quartz as, a hairspring, and/or any other suitable time base known in the art.

On page 4, amend the paragraph beginning on line 18 as follows:

~~The caliber~~ Caliber 26 ~~is, in particular,~~ may be equipped with a plate and with a bridge (neither of which is referenced), and with a work train ~~comprising~~ that includes mobiles ~~which are~~ that may be pivotably mounted between the plate and the bridge, ~~only~~ Only the end of the a seconds mobile 30 ~~being~~ is visible in ~~figure~~ FIG. 3. A minute train, which is also not ~~represented~~ shown in FIG. 3, ~~bears~~ may bear and ~~carries~~ carry out the driving of ~~the~~ minute hands 14 and hour hands 16.

On page 4, amend the paragraph beginning on line 24 as follows:

~~The base~~ Base caliber 26 ~~bears~~ may bear a module 32 ~~comprising~~ that includes a plate 34 and a bridge 36 which, together, may serve as support for an animation train

38. The latter ~~comprises~~ may include three mobiles 40, 42 and 44, each formed by a pinion identified by the letter ~~[[a]]~~ "a", and by a wheel identified by the letter ~~[[b]]~~ "b", with the exception of ~~the~~ mobile 44, which ~~comprises~~ may include a pinion 44a and a board 44c, but no wheel.

On page 4, amend the paragraph beginning on line 29 as follows:

~~The mobile~~ Mobile 40 is may be coaxial to ~~the~~ seconds wheel 30. ~~Its pinion~~
Pinion 40a is may be equipped with a hole engaged in the end of ~~the~~ seconds mobile 30, the hole and the end being arranged in such a way that ~~the~~ mobiles 30 and 40 may rotate as one, ~~for example~~ owing, for example, to an ~~indenting~~ indentation arranged on ~~the pinion 40a, the mobile~~ In such an embodiment mobile 40 ~~being in this case~~ may be press-fitted on the end of ~~the~~ mobile 30.

On page 5, amend the paragraph beginning on line 4 as follows:

The wheel 40b ~~drives the~~ may drive pinion 42a and, with it, ~~the~~ wheel 42b, which meshes may mesh with ~~the~~ pinion 44a of ~~the~~ mobile 44.

On page 5, amend the paragraph beginning on line 6 as follows:

~~The mobiles~~ Mobiles 40, 42 and 44 ~~are~~ may be numbered in such a way that the speed of rotation of ~~the~~ mobile 44 is may be of the order of 1 revolution per second, typically ranging between 0.2 and 2 revolutions per second.

On page 5, amend the paragraph beginning on line 9 as follows:

~~The mobiles~~ Mobiles 40 and 42, as well as ~~the~~ pinion 44a, ~~are~~ may be disposed between and may pivot between ~~the~~ plate 34 and ~~the~~ bridge 36. As can be seen in figure FIG. 5, ~~the~~ pinion 44a is may be equipped with a pivot 44d projecting from ~~the~~ bridge 36 and on which ~~the~~ board 44c is may be press-fitted. The latter ~~supports~~ may support a rod 44e, the function of which will be specified further below.

On page 5, amend the paragraph beginning on line 14 as follows:

~~The animation~~ Animation part 22 ~~comprises~~ may include a central portion 22a (~~fig. FIG. 2~~) equipped with a hole in which a shaft 22b, pivotably mounted between the plate 34 and the bridge 36, proximate to the center of the movement, is may be press-fitted. Two arms 22c and 22d may extend on either side of ~~the~~ central portion 22a. The free end of ~~the~~ arm 22c ~~bears~~ may include a bob 22d, which is may be apparent through ~~the~~ window 20, and ~~simulates~~ may simulate the bob of a pendulum. The end of ~~the other~~ arm 22d is may be equipped with a rod 22e, which can better be seen in figure FIG. 5 and is may be intended to secure a connection with the board 44c, via a lever 46 pivotably mounted on ~~the~~ rods 44e and 22e. Thus, ~~the~~ mobile 44 and ~~the~~ lever 46 together may form a control element for ~~the~~ animation part 22.

On page 5, amend the paragraph beginning on line 24 as follows:

~~The lever~~ Lever 46 ~~bears~~ may include two watchmaker's jewels 46a and 46b, press-fitted respectively at one and the other of its ends, ~~and cooperating one~~ One of the jewels 46a and 46b may cooperate with ~~the~~ rod 22e, and the other may cooperate

with the rod 44e. In its middle part 46c, it has lever 46 may include a serpentine structure, which ~~lends~~ may give it greater elasticity than ~~that of~~ a straight bar.

On page 5, amend the paragraph beginning on line 28 as follows:

~~The lever~~ Lever 46 is may be held on the rods 22e and 44e by sleeves 48 press-fitted on the rods 22e and 44e, leaving a sufficient space with the jewels 46a and 46b to ensure that these are not impeded in their movement.

On page 6, amend the paragraph beginning on line 1 as follows:

~~The mobile~~ Mobile 44 and the lever 46 thus together may form a connecting rod system driving the animation part 22.

On page 6, amend the paragraph beginning on line 3 as follows:

In the watch which has just been described, when it is of the hairspring type, the seconds wheel ~~performs~~ may perform a slight jump each time that the an escapement gives an impetus to the a balance wheel. This ~~occurs~~ may occur with each semioscillation, i.e. from 5 to 10 times per second. This frequency is may be too low to simulate a continuous movement. In practice, the duration of the impetus is may be of the order of 1% of the time of the half-period. For the pendulum to give the illusion of having a continuous and sinusoidal movement, it is may be necessary to introduce an element ~~which dampens~~ that may dampen the movement. ~~It is the function of the, such as, for example,~~ serpentine structure 46c, which ~~lends~~ may lend a greater elasticity to the lever 46.

On page 6, amend the paragraph beginning on line 12 as follows:

~~By way of a variant~~ Additionally or alternatively, the elastic structure 46c of the lever 46 could be replaced by mounting the wheel 42b in a freely rotatable manner on the pinion 42a, and by connecting them ~~by~~ with a flat spiral spring (not shown). ~~This variant has not been represented in the drawing, for it is easily realizable by a person skilled in the art.~~

On page 6, amend the paragraph beginning on line 17 as follows:

In order to obtain an optimal simulation, the period of the unit formed by the animation part 22 and the elastic element 46b ~~ranges~~ may range between that defined by the periodicity of the advancement of the work train and that of the oscillating movement of the animation part 22.

On page 6, amend the paragraph beginning on line 21 as follows:

~~Advantageously, and in~~ In order to ensure that the oscillation movement of the animation part 22 suffers the least possible perturbations, the unit formed by the lever 46 and the animation part 22 is may be balanced, ~~that is to say that~~ wherein its center of gravity is may be located substantially on the pivot axis of the animation part 22.

On page 6, amend the paragraph beginning on line 25 as follows:

~~The way~~ Additional or alternative ways of ensuring the connection of the animation part 22 with the animation train 38 ~~could~~ may be realized by other means than those represented and described. It is may thus be possible to realize an

animation part whose arm 22d ~~would~~ may be considerably shortened and ~~would~~ may bear a pin. ~~The lever~~ Lever 46 ~~would~~ may be replaced by a fine spring, fixed on the pin of ~~the lever~~ 22d. The other end of the spring ~~would~~ may be equipped with a protuberance in which a jewel similar to ~~that bearing the reference~~ jewel 46b ~~would~~ may be press-fitted. It ~~would~~ may thereby be possible to have a more flexible elastic element.

On page 7, amend the paragraph beginning on line 3 as follows:

~~Self-evidently~~ Additionally or alternatively, the animation part 22 could equally have a form other than that of a pendulum, with its verge and its bob, without ~~for all that~~ departing from the scope of the invention. ~~The animation~~ For example, animation part 22 could ~~thus~~ have the form of a boat, ~~the~~ with an oscillating movement simulating the movement of ~~the waves~~, or of any other object performing a slow ~~pendular~~ pendulum movement.

On page 7, amend the paragraph beginning on line 8 as follows:

It is also ~~possible, of course, to integrate~~ contemplated that the components ensuring the drive of the animation part may be integrated directly onto the plate of the base caliber.

On page 7, amend the paragraph beginning on line 10 as follows:

The exemplary embodiment ~~represented~~ shown in figure FIG. 6 ~~allows~~ may allow the smoothness of the movement of the automaton to be further improved. In ~~this figure~~

FIG. 6, only the mobiles have been represented. ~~They~~ The mobiles may pivot, ~~self-~~
~~evidently,~~ within the frame of the movement, generally between a bridge and the plate.
 In this exemplary embodiment, the driving element, which supplies the power to the
 work train, is may be formed by a barrel spring, housed in a barrel 50, constituting the
 first mobile of the work train, the latter driving an escapement and a hairspring, which
 together may form a pulsed movement element. The animation train ~~comprises~~ may
include five mobiles 52, 54, 56, 58 and 60.

On page 7, amend the paragraph beginning on line 19 as follows:

~~The mobile~~ Mobile 52 comprises may include a pinion 52a, in mesh with the
 toothing of the barrel 50, and a wheel 52b, which drives the mobile 54 via its ~~a~~ pinion
 54a. The latter is may be attached to a collet 54b, fixed by press-fitting and bearing a
 balance spring 54c. A wheel 54d is may be mounted ~~loose~~ relatively loosely on the
 pinion 54a, held axially in place by a ring 54e press-fitted on the shaft of the pinion 54a. -
~~It is~~ Wheel 54d may be equipped with a stud 54f fixed to the end of the balance spring
 54c. ~~The balance~~ Balance spring 54c is may be fixed on the collet 54b and on the stud
 54f in traditional manner, for example by gluing or welding. ~~The pinion~~ Pinion 54a and
 the wheel 54d may thereby rotate as one, but are may be elastically connected one to
 the other, dampening the jerks due to the jerky movements of the balance wheel. It is
may also be possible to ~~realize the~~ arrange balance spring 54c and its fixing means, i.e.
 the collet 54b and the stud 54f, in a single piece, press-fitted on the pinion 54a and on a
 stud contained on the wheel 54d.

On page 8, amend the paragraph beginning on line 3 as follows:

~~The wheel~~ Wheel 54d ~~meshes~~ may mesh with the mobile 56 and, more particularly, with its pinion 56a, whereas its wheel 56b ~~drives the~~ may drive mobile 58 via its pinion 58a. ~~The wheel~~ Wheel 58b ~~meshes~~ may mesh with the pinion 60a of the mobile 60. The latter ~~comprises~~ may include a board 60b bearing a rod 60c, similar to the rod 44e, and on which ~~pivots the lever 46~~ may pivot.

On page 8, amend the paragraph beginning on line 8 as follows:

~~The board~~ Board 60b ~~will~~ may be dimensioned such that it ~~forms~~ may form a sufficient mass of inertia to enable the balance spring 54c to remain slightly wound, such that the pendulum ~~continues~~ may continue moving between two alternations of the balance wheel. The dimensioning of the balance spring and of the mass of inertia ~~will~~ may be ~~all the more~~ delicate since the power ~~will~~ may be tapped from a rapid mobile of the gear work train.

On page 8, amend the paragraph beginning on line 14 as follows:

~~The~~ Additionally or alternatively, the tapping ~~could equally~~ may be effected from the center wheel or from the third wheel. Nevertheless, by tapping the power at the level of the barrel, the number of mobiles contained between the element animated by a pulsed movement, i.e. the escapement, and the element simulating a sinusoidal movement, i.e. the pendulum, is such that their elasticity is may be sufficient to make the impetuses of the balance wheel invisible. ~~It is not therefore~~ Therefore, it may not be

essential to add a supplementary elastic element, even if the animation part oscillates at a relatively high frequency, such as, for example, 2 Hz.

On page 8, amend the paragraph beginning on line 22 as follows:

~~figure~~ FIG. 7 shows another exemplary embodiment of the invention, in which the animation train 38 is may be confined to a wheel 62 disposed on the shaft of the seconds wheel of the work train and the last mobile 44, whose pinion 44a ~~meshes~~ may mesh with the wheel 62. As explained above, the board 44c ~~drives the~~ may drive animation part 22.

On page 8, amend the paragraph beginning on line 26 as follows:

The gearing ratio between the wheel 62 and the pinion 44a ~~is advantageously~~ may be 1/12, such that the period of the animation part is may be 5 seconds. In this case, the pulsed movement of the work train is may be heavily reduced, on the one hand due to the high moment of inertia of the wheel 62, and on the other hand due to the very small displacement of the animation part with each alternation of the balance wheel.

On page 9, amend the paragraph beginning on line 3 as follows:

In order to prevent the gear shakes of the animation train from generating random movements of the animation part, it is may be possible to equip the latter with a brake working upon the end of a pivot of its shaft.

On page 9, amend the paragraph beginning on line 6 as follows:

In the examples described above, the control element for the animation part ~~is~~ may be of the crank type. The same effect could be obtained by means of a cam and a lever resting against the cam.

On page 9, amend the paragraph beginning on line 9 as follows:

Thus, by virtue of the particular characteristics exhibited by the movement according to the exemplary embodiments of the invention, it is ~~is~~ may be possible to realize a watch equipped with a slow animation ~~which tends to~~ that may bring a touch of serenity and calm, contrasting with the normal conditions of everyday life, and thus offering a little bit of calm to the wearer, even when he reads the time. Moreover, the presence of a wheel train ~~allows~~ may allow the pivot point of the animation part to be placed almost anywhere, and especially in the immediate vicinity of the center of the movement, ~~which lends~~ which may provide the watch with an original esthetic aesthetic appearance.

On page 10, amend the heading on line 1 as follows:

~~Claims~~ WHAT IS CLAIMED IS: